

## CLAIMS

1. A method of detecting a megakaryocyte comprising:  
(a) providing a sample comprising a cell;  
(b) detecting a plurality of morphological information from the  
cell;  
(c) generating a scattergram from the plurality of morphological  
information; and  
(d) determining whether a population exists in a megakaryocyte  
region of the scattergram.

2. The invention of claim 1 further comprising preparing an assay  
sample by mixing the sample with a reagent.

3. The invention of claim 1 wherein the detecting involves an  
automated hematology analyzer.

4. The invention of claim 2 wherein the reagent comprises a  
fluorescent dye.

5. The invention of claim 2 wherein the preparing of the assay  
sample does not involve an immunological method.

6. The invention of claim 1 wherein the plurality of morphological  
information comprises side scattered light and fluorescent light emitted by the  
cell.

7. The invention of claim 1 wherein the plurality of morphological  
information comprises forward scattered light and side scattered light emitted  
by the cell.

8. The invention of claim 1 wherein the plurality of morphological information comprises forward scattered light and fluorescent light emitted by the cell.

5 9. The invention of claim 2 wherein the detecting comprises passing the assay sample through an electrically charged aperture and identifying a change in direct current resistance and radio frequency resistance.

10 10. The invention of claim 1 further comprising identifying the megakaryocyte region of the scattergram.

11. The invention of claim 10 wherein the identifying comprises:  
generating a first reference scattergram from a plurality of  
15 information detected from a purified megakaryocyte;  
generating a second reference scattergram from a plurality of  
information detected from a cell in at least one of a peripheral blood  
sample and a bone marrow sample, wherein the peripheral blood  
sample and the bone marrow sample are substantially free of  
20 megakaryocyte; and  
comparing the first reference scattergram to the second  
reference scattergram, thereby identifying the megakaryocyte region.

25 12. The invention of claim 11 wherein the purified megakaryocyte comprises a differentiated Dami cell.

13. The invention of claim 11 wherein the purified megakaryocyte comprises a cell induced from a CD34 positive hematopoietic cell.

30 14. The invention of claim 13 wherein the cell is induced with thrombopoietin.

15. A method of detecting a megakaryocyte comprising:

(a) preparing an assay sample by combining a sample comprising a cell with a reagent;

(b) detecting a plurality of information from the cell, wherein the information is selected from the group consisting of cell size information, cell interior information, degree of cell staining information, and combinations thereof;

(c) generating a scattergram by plotting the plurality of information; and

(d) determining whether a population exists in a megakaryocyte region of the scattergram.

16. The invention of claim 15 wherein the detecting involves an automated hematology analyzer.

17. The invention of claim 15 wherein the reagent comprises a fluorescent dye.

18. The invention of claim 15 wherein the preparing of the assay sample does not involve an immunological method.

19. The invention of claim 15 wherein the cell interior information is detected based on side scattered light emitted by the cell, and the degree of cell staining information is detected base on fluorescent light emitted by the cell.

20. The invention of claim 15 wherein the cell size information is detected based on forward scattered light emitted by the cell, and the cell interior information is detected base on side scattered light emitted by the cell.

21. The invention of claim 15 wherein the cell size information is detected based on forward scattered light emitted by the cell, and the degree

of cell staining information is detected base on fluorescent light emitted by the cell.

5                   22.     The invention of claim 15 wherein the detecting comprises passing the assay sample through an electrically charged aperture and identifying the cell size information based on a change in direct current resistance and the cell interior information based on a change in radio frequency resistance.

10                   23.     A method of detecting a megakaryocyte comprising:  
                    (a) preparing an assay sample by combining a sample comprising a cell with a reagent comprising a fluorescent dye and a hemolytic agent;  
                    (b) detecting scattered light and fluorescent light emitted by the  
15                   cell;  
                    (c) generating a scattergram by plotting the scattered light and the fluorescent light; and  
                    (d) determining whether a population exists in a megakaryocyte region of the scattergram.

20                   24.     The invention of claim 23 wherein the scattered light comprises side scattered light.

25                   25.     The invention of claim 23 wherein the detecting involves an automated hematology analyzer.